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ABSTRACT

A theory of learning based on recent insights from sociology and semiotics is explicated. Building on the work of Vygotsky, Dewey, Halliday, Barnes, Deely, Eisner, and others, this sociosemiotic model of learning is used as a frame of reference for thinking about the process by which texts are created from sensation. It is argued that the process by which learners come to make sense of their world is virtually the same for all learners. The essential nature of the social dimension of learning must be recognized. The story of two boys learning by watching a spider illustrates that learning is a social and psychological semiotic process. The process by which sensation, context, foreground, text, and data pool interact is psychological; and this process allows people to interact as members of a social community. While the apparatus for cognition is psychological, the substance of the process (the data perceived and the texts created) is sociological. A social theory of learning posits that knowledge is a construction of beliefs derived from the learner's active participation within a social community. Knowledge is based in part on empirical observation, but sense is made of what is perceived through the learner's active search for patterns of understanding, using present needs and past experiences. Eleven flowcharts illustrate the relationships among aspects of knowledge and learning. (SLD)

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Learning as a Social/Semiotic Process

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Learning as a Social/Semiotic Process

As educators and educational researchers we are guided by our evolving beliefs about learning. The pedagogical and methodological decisions we make are rooted in not only our beliefs about our students as learners, but about ourselves as learners as well. Educators and researchers who see themselves as more than technicians dispensing facts and skills or rote followers of methodological protocols appeal to their understanding of the learning process when planning learning events. We have available to us three sources of knowledge about learning - our learned formal theories of learning, our tacit knowledge about how learning functions, and our educational experiences. Reflective educators and researchers use one source of knowledge to challenge and push their thinking about the others. Through this transactive process our tacit knowledge finds words, and can then be critically examined in light of formal theories of learning and of practice. The reflective practitioner guides and shapes both practice and theory. It is imperative as educators and researchers that we recognize we operate on the basis of theory. The danger is to risk believing that we operate on known 'truth' and that our underlying beliefs need not be examined. What is more unsettling than to have the basic premises by which we operate called into question? A new theory does just that.

In this essay I will explicate a theory of learning based on recent insights from sociology and semiotics. I will also argue that

from the perspective of my model, learners, whether they are in or out of the classroom, and whether they are infants, children, or adults, all share the same sociosemiotic process of learning. I will argue that the process by which they come to make sense of their world is virtually the same across all learners. Finally, I will use this 'learner's stance' to develop some of the potentials available to us as learners, curricular thinkers, and researchers.

I will begin this essay with a brief review of the two major learning theories evidenced in much of school today - the associationist's theory of learning and the cognitive/developmentalist's theory of learning.

Theories of Learning in Education

Current educational research and practice seem to be predicated on two theoretical foundations - an associationist view of learning and a cognitive/developmental view of learning. Recent interest in the role of social interaction is also providing a theoretical foundation for what many educators have intuitively recognized - that learning is social. In this section I will discuss each of these theoretical positions and examine educational practice resonant to each.

The Associationist View

Watson (1925), Thorndike (1932) and more recently Glasser (1967) each proposed that learning is the conditioned response to stimuli. Central to this perspective is that learners (human or

otherwise) react to their environment. Some responses seem to be unconditioned (such as reacting to a loud noise, bright light, or heat) while other responses are clearly 'learned.' For the associationist, it is these learned stimulus-response associations that constitute knowledge. Stimulus-response bonds are created and strengthened through repetition and reward or punishment. Dogs salivating at the sound of a buzzer as a result of associating the sound with food, a baby crying at the sight of a laboratory rat after associating the rat with the loud ring of a bell, and chickens pecking buttons in response to colored lights for food rewards are each examples of the S-R bond.

Watson (1925) argued that more complex behaviors can be explained by the same process; as complex chains of S-R bonds. Learning is transferred to new situations if the stimulus of a previously learned S-R bond is similar to the new stimulus. In this case the new stimulus will evoke the same response as the previously learned S-R bond. Chains of S-R bonds are built through this process and this accounts for all behavior.

The associationist's view of education is managing the learning environment so that appropriate behavior is reinforced and inappropriate behavior is not reinforced. This is accomplished through controlled practice using rewards and punishments. The learning task is broken into small steps with a progression toward more complex behaviors. Immediate feedback corrects and guides the learner.

From an associationist perspective learners are viewed as passive responders to their environment. Knowledge is viewed as

discrete associations that reflect natural relationships within the environment. Therefore, it is the environment and not the learner that determines what will be learned.

Teachers are learners too. An associationist perspective of teacher change would assume that 'truth' (natural relationships) exists in the environment. As learners, teachers need to be led to an understanding of that 'truth.' Teachers must rely on experts to supply that truth through providing the necessary sequence of experiences. These experiences are designed to insure that the appropriate S-R bonds are developed. The experts select the content to be taught and the length of training is determined by the time needed to master that content. Because teachers are viewed as passive learners, teacher change programs need not account for individual differences. All teachers move through the same set of experiences with the same intended result.

This study rejects an associationist perspective of learning. Far from being passive, learners (whether children or professional educators) are viewed as active participants in their own learning process. Further, the assumption made by the associationist that a given stimulus with result in a predictable response fails to appreciate the significant differences each learner brings to the task or the particular social constraints in operation during any given engagement. Learning is reduced to a closed system of reaction that does not allow for bursts of insight or intuitive leaps. A learning theory that explains an active generative process of learning is needed.

Cognitive/Developmental View

A cognitive/developmentalist perspective views the learner as an active participant in the learning process (Piaget, 1950; Kohlberg, 1969; Loevinger, 1976). Piaget postulates that all species exhibit two "invariant functions"; organization and adaptation. Organization refers to the relationship of behavioral and cognitive structures to one another. For instance seeing and grasping are each psycho-cognitive structures. An infant can see objects, and can grasp objects before he/she can put the two structures together. Simple structures get organized into more complex structures. Adaptation to an environment is accomplished through accommodation and assimilation. Upon encountering an unknown situation the learner must accommodate it, that is the learner must change in response to environmental demands. This might entail stopping and attending to the unknown, looking at it, picking it up, and in the case of an infant, putting it in his/her mouth. Through the process of accommodation the learner is also assimilating. As the learner changes and reacts to the environment the learner assimilates the new object or event into his/her framework, that is to say that he/she assigns it meaning.

From a Piagetian perspective all learners process experiences through cognitive structures. These structures are organized in a hierarchy from less complex to more complex. Structures are constructed in response to the learners environment but are constrained by his/her 'stage' of development. Growth or learning occurs first within a particular stage of development and then

proceeds to the next stage in the sequence. The movement from one stage to the next marks a qualitative change in the thinking process. Growth occurs as an interaction between the cognitive processes associated with the learner's current cognitive stage of development and his/her environment (Sprinthall & Thies-Sprinthall, 1983). Piaget argues that these stages, which emerge between birth and adolescence, are by in large a matter of maturation (Ginsberg & Opper, 1979). While experience is necessary cognitive growth is constrained by maturation.

Education from a cognitive developmental perspective recognizes the learners active role in learning. Piaget posits that the learner is a seeker of equilibrium and given tasks that are well suited to the learner's current stage of development he/she will engage in the task without outside rewards or punishments (Smith, 1975). Motivation is intrinsic to the learner within his/her environment. The educator's role is to provide appropriate experiences that are neither too similar to what is already known nor too different from what is already known. Cognitive developmentalists feel that a specific stage of development is a prerequisite to learning a new concept. A concept can not be understood until the learner has the necessary cognitive structures to understand it. Assimilation and accommodation are dependent on the experience being new and yet not so strange that there are no cognitive structures currently available from which to build new structures. From this perspective the main goal of the educator becomes assessing the learner's current level of development and

then organizing the environment for the learner which includes discrepancies that the learner is ready to attend to. The best learning task is one that almost but not quite matches the learner's cognitive structure. If the educator tries to teach a learner something at the inappropriate stage he/she will not be able to transfer the learning to a new situation.

While Piaget's stages of development extend from birth to adolescence others have applied a cognitive developmental perspective to adults (Hunt, 1978; Perry, 1969) and specifically to teachers (Sprinthall & Thies-Sprinthall 1983). Using the notion of 'stages' and 'schemes' Sprinthall and Thies-Sprinthall propose a teacher developmental program that includes 'role taking' and 'guided reflection' emphasizing how to ask questions and how to view an experience from alternative perspectives. The leader models various discrepant behaviors and teacher practices to which the learners react. Like the associationist model of learning it is the teacher trainer that is instrumental in determining what will be learned and in structuring the environment to assure that it will be learned. This is accomplished by first assessing the current stage of development of the teachers and then planning a set of experiences that are sufficiently difficult so that the teachers are challenged and yet not so difficult that the the learners have no usable 'schemes' or 'structures' from which to accommodate and assimilate new knowledge. Unlike the associationist perspective, the role of the teacher is seen as active. Through a process of scaffolding the leader provides the necessary experiences that will allow the learners to

create new mental structures based on the structures they already posses. Unlike the associationist perspective, the learning process is rooted in the development of cognitive structures rather than the mastery of specific content. From a cognitive/developmental perspective learning is seen as a life long process.

Neither of the described perspectives of teacher change and professional growth account for teachers as architects of their own growth. Neither conditioned behaviors nor scaffolding accounts for purposeful self-directed development. It is here that the social dimension of learning becomes a powerful model for understanding teachers and change.

Toward a New Paradigm

In judging the value of these theories it is pointless to consider whether we learn, that is not the issue. Our brains are designed for that very purpose (Smith, 1975). However, this does not imply that theory is unimportant. Theory matters. It matters because it is the guiding force in planning for the learning of others and ourselves, and it determines what criteria we will use to evaluate that learning. Dewey reminds us, "Perhaps the greatest of all pedagogical fallacies is the notion that a person learns only the particular thing he is studying at the time. Collateral learning in the way of formation of enduring attitudes, of likes and dislikes, may be and often is much more important than the spelling lesson or lesson in geography or

history that is learned" (Dewey, 1938, p. 48). A theory of learning must account for just that - learning - not just the mastery of a priori objectives but the process by which we make sense of our world. It is for this reason that I have embraced a sociosemiotic theory of learning. A social perspective of learning provides a powerful model for exploring and supporting teacher growth and learning but doesn't specifically address how learning takes place. Here we turn to a semiotic perspective of learning.

A Semiotic View

How do we recognize a smile from a sneer, a laugh from a cry, or a sigh from a groan? How can a string of human sounds create a story in the mind of the listener? Why does the sight of fire cause pleasure in one instance and panic in another? How do we make sense of the world around us? Semiotics is a powerful theoretical model for examining the processes of cognition - from sensory stimuli to understanding. At the root of this theory is the 'sign.'

C. S. Peirce (1966) posits that direct knowledge of the world is impossible. What we know about our world is mediated by signs. Peirce's notion of a sign is, "something which stands to somebody for something in some respect or capacity" (Peirce, 1955 p. 99). A cup on a table might be viewed as a coffee cup, a fine piece of china, or an invitation to relax and enjoy a hot beverage. It could be viewed as a mass of molecules, or a baked clay vessel with a glassy glaze. If the observer is from another culture it might be viewed as an interesting

cultural artifact that reveals something about the eating habits of its user. In any case what the observer perceives is not directly the object itself but a sign that has the potential for meaning through interpretation. Because it is an interpretation, variations in meaning from one observer to another are expected. Our perception of the artifacts and actions around us is not direct, but rather mediated through signs. Semiotics is the study of signs and semiosis is the process by which we make sense of our world.

Signs are open systems. The sign is not the object itself nor does it directly stand for the object in a one to one correspondence. Peirce argues that in semiosis the sign is interpreted through a cultural concept or hypothesis and creates another sign which in turn is open to interpretation.

Signs are cultural constructions. To study signs is to study how a cultural group defines its world. What constitutes a 'cup' in one culture may not be recognized as a vessel at all in another culture.

Deely (1982) represents the process of semiosis as a triadic relationship involving sensation, perception, and understanding.

This process moves from sensation, an interaction of sense organs and the environment, to perception, a conscious attending to and construction of information, to understanding, which results in the formation of general rules or laws.

Semiotics addresses learning as a psychological process within a cultural framework while a social view of learning addresses learning as a sociological process within a cultural frame. Both perspectives recognize the constructive nature of knowing, the active

role of the learner, and contribution played by being a member of a culture in how we construct our world. In the next section I will propose a model of learning that takes both a social and a semiotic perspective on learning.

Putting It Together: A Sociosemiotic Model of Learning

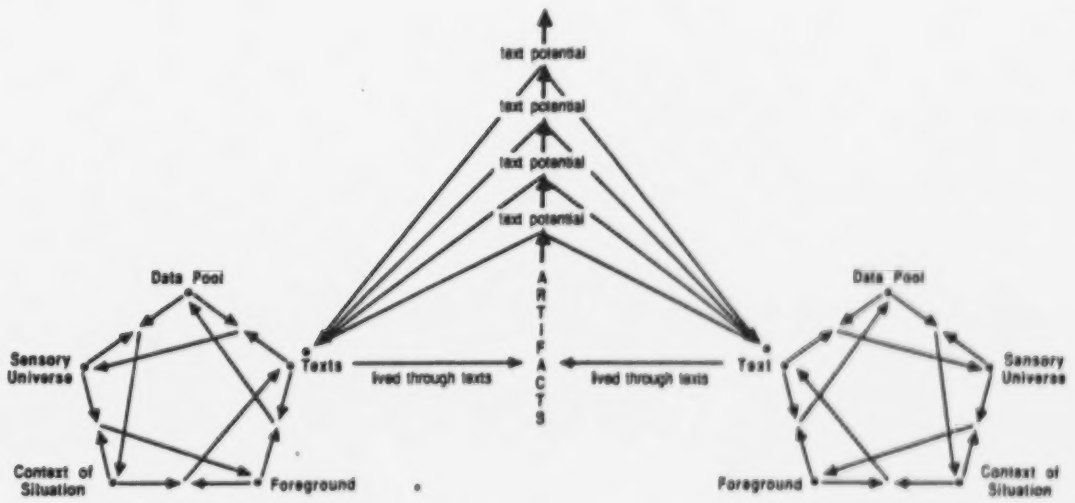

Figure 1. A Sociosemiotic Model of Learning

We see from the previous two sections that social and semiotic views of learning share much. In this section I will present a

sociosemiotic perspective of learning (see Figure 1) and discuss what it might look like in operation.

Figure 1 represents the transactional nature of knowing from a social and semiotic perspective of learning. I will use the model and a story about Jose and Reuben to discuss learning as a sociosemiotic process.

The Spider

Jose and Reuben, five year old friends, are playing in the back yard with a ball. Jose runs to retrieve the ball from under a bush and discovers a spider dangling from its web. As Jose watches, the spider lowers itself to a twig, fastens its web to it and crawls back up. Next, the spider descends once again, but this time it walks along a horizontal strand before attaching its thread. Jose continues to watch as the spider anchors a radiating network of spokes.

Like all of us, Jose is a learner and he is learning as he watches the spider at work. At the risk of being presumptuous let's consider what that learning process might look like.

Jose comes to this learning experience with a wealth of knowledge about his world and how it works. He has had many previous experiences with spiders and insects including; past first hand experience, stories, TV, movies, and his own make-believe play. These remembered experiences represent meaning wholes - or Texts. Halliday (1975) defines text as "a semantic structure that is formed out of a continuous process of choice among innumerable interrelated sets of semantic options" (p. 124). Texts then are our

on-going stories, or units of meaning. They are on-going in that new data is supplied through our observation and our remembered knowledge. Old texts provide insights for the current texts we are thinking about.

Jose's wealth of knowledge does not stop with spiders - in his five years of life he has learned a lot about how the world works. All this information, even though it is consciously forgotten, is potentially available to him in this new learning experience. Looking specifically at language, Harste, Woodward, and Burke (1984) refer to this reservoir of knowledge as a Linguistic Data Pool (see Figure 2). Rowe (1985) expands this notion to communication in general.

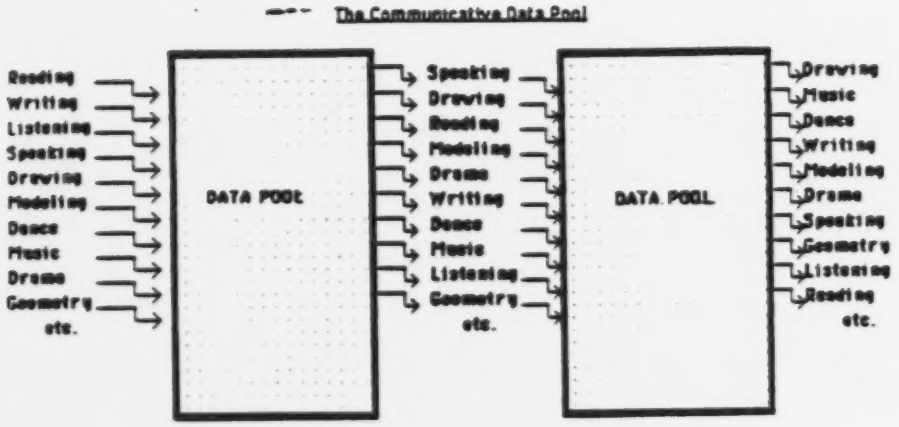

Figure 2. The Communicative Data Pool (Rowe, 1985)

Burke writes:

> What language users learn from a language encounter feeds a common pool of linguistic data which can be drawn upon in subsequent language encounters.... Growth in a given expression of language must be seen as a multilingual event; in reading, for example, hearing a set of directions read, encountering written language with others, listening to a book, talking about a newspaper article, or attempting to write one's own story, all support growth and development in literacy." (Harste, Woodward, & Burke, 1984, p. 210).

Rowe extends this argument to other sign systems by which we communicate suggesting that what is expressed or experienced in one sign system supports learning and growth in all others. (Rowe, 1985)

As Jose looks at the spider at work a flood of sensory data excites the nerves of his sensory organs (eyes, ears, skin etc.). This flood of data is not selective. All the light that falls on his retinas, all the vibrations that reach his ear drums, all the contact to his skin, and all the smells in the air are sensations that stimulate his nervous system. It is through our sensory organs that we come in contact with the world. Neisser (1976) calls this available sensory data our Sensory Universe.

It would not be possible for Jose (or anyone) to be aware of <u>all</u> the sensory data bombarding him at any given time. It would not be useful either. Through sensation, an essential process in learning (see figure 3), the learner ignores what is not necessary and attends to what is important (Smith, 1982; Neisser, 1976). And to know what is important requires knowing what you are looking for. This process of predicting what is 'out there' happens as a result of a transaction between our current working text (what we are

currently thinking about) and our data pool (the story of past experiences). This transaction gives rise to the Sensory Universe which represents in a general sense what our sensory organs can expect to experience.

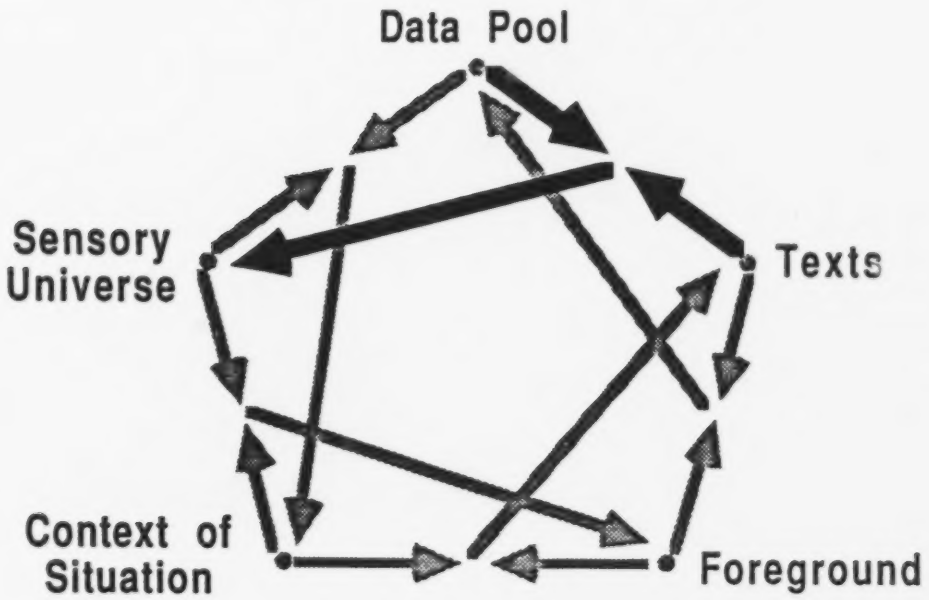

Figure 3. The Sensation: A transaction between Text and Data Pool

If Jose has already identified the creature as a spider then he may have a "working text" in his mind: There is a spider in the bushes doing something. The possibilities of what that 'doing something' might be are realized in Jose's Data Pool. All his past

experiences (created and re-created in infinite possibilities) are available to him. Jose's predictions can not be accounted for solely from his past experiences nor solely from what he currently sees. It has to be accounted for in the transaction between his current text and insights from his Data Pool. It is this transaction that will allow him to direct what sensory data will be anticipated. This might include looking for evidence of a web, because he knows that spiders make webs. It might include checking himself for spiders, because he knows that spiders bite. His perception then is directed to satisfy his curiosity and fears.

At this point Jose looks worried. His safe environment of just a few moments ago has been transformed into a more hostile one. What Jose sees (perceives from various senses) in transaction with his Data Pool shapes his current view of the world in which he must function. This process is called perception (see figure 4) and gives rise to the Context of Situation. Dewey (1938) writes:

> An experience is always what it is because of a transaction taking place between an individual and what, at the time, constitutes his environment, whether the latter consists of persons with whom he is talking about some topic or event, the subject talked about being also a part of the situation; or the toys with which he is playing; the book he is reading (in which his environing conditions at the time may be England or ancient Greece or an imaginary region); or the materials of an experiment he is performing. The environment, in other words, is whatever conditions interact with personal needs, desires, purposes, and capacities to create the experience which is had. Even when a person builds a castle in the air he is interacting with the objects which he constructs in fancy (pp. 43-44).

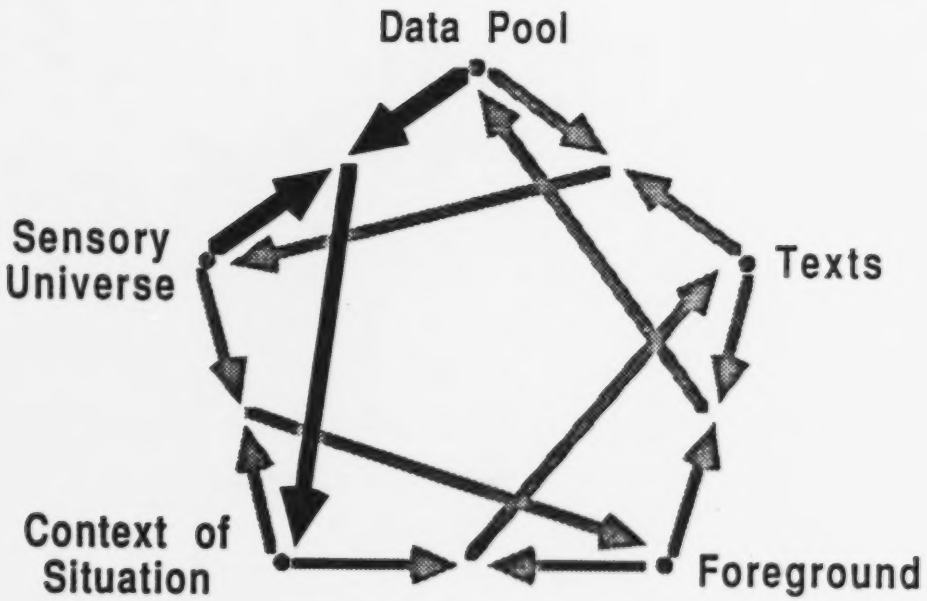

Figure 4. Perception: A transaction between Data Pool and Context of Situation

Halliday (1975) points out that the context of situation is not simply the immediate environment but can function on several levels at the same time. In fact, the context of situation is not our environment at all but rather an interpretation of our environment. Therefore, the context of situation may look very different from person to person even when they are sharing the same experience. As our beliefs about the situation change, the possibilities and probabilities within this interpretive environment also change, and

therefore what is seen as appropriate responses must also change. If Jose finds fragments of web on his clothes, his interpretation of his environment (his context of situation) may look even more frightening and his field of appropriate actions will reflect that change. At this moment, a "tickle" on the arm or leg might cause him to jump and swat rather than absent mindedly brush or scratch the spot.

Out of everything there is to see and feel Jose is now very focused. If there was a bird singing in the tree it would not be likely that Jose would hear it. If there was a caterpillar crawling on a leaf it would not be likely that Jose would see it. Through the process of attention (see figure 5) specific elements are foregrounded. By looking for web on his clothes Jose is foregrounding elements that merit focus. Other elements that might be foregrounded are the ball they threw, and the spider. It takes both the Context of Situation and the Sensory Universe to judge what elements might merit attending to. The Context of Situation establishes the general rules under which things are likely to function, and the Sensory Universe provides the specific elements that might be foregrounded. The transaction between these two constructs describes the process of attention. By attending to significant elements in the environment they are foregrounded. In becoming foregrounded these elements take on an independent existence - while they can still be viewed within their current context they can also be transposed to other remembered or imagined contexts. I believe it is the process of foregrounding that allows us to abstract and fantasize.

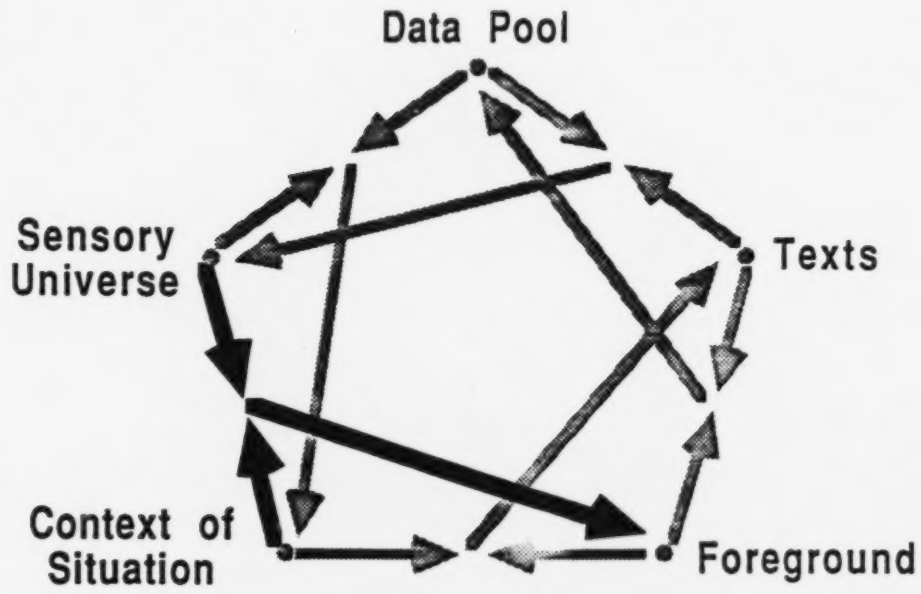

Figure 5. Attention: The transaction between sensory universe and the context of situation

Jose finds no web on his clothes and notices that the spider is suspending its thread in the shape of the spokes of a wheel. Given the context of situation (back yard, retrieving ball, no longer threatening, spider etc.) and the specific elements that Jose foregrounded he creates a meaningful unit - a text. The process of text construction is 'comprehension' (see figure 6). In this case the text might be that the spider is building a web and it starts by building the crossing parts first. Had Jose found spiders on him his

text would have been very different (e.g. the spider is going to bite him). In either case the process is the same. Jose constructs a text as a result of the transaction between the Context of Situation and the Foreground.

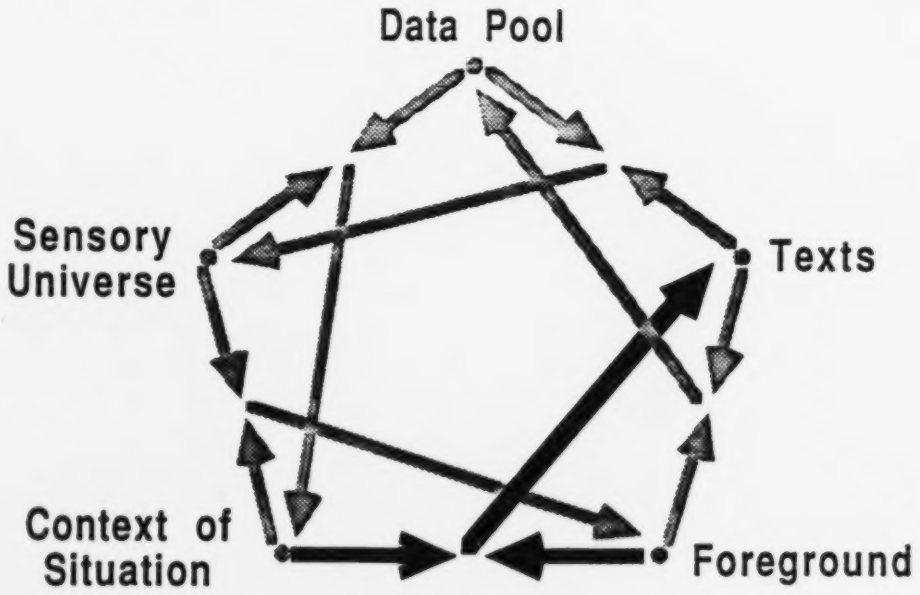

Figure 6. Comprehension: The transaction between the Context of Situation and the Foreground

As a result of this experience Jose has new knowledge about spiders and the process of web building. This new knowledge takes the form of abstract rules or laws that will be available to him as general knowledge in later encounters. In the future Jose may

decide to write a story about spiders, he may want to share what he knows about spiders with a friend, he may at some time draw a picture or use string to represent a web. In each case the knowledge he created this day will be available to him. This 'knowing' is now a part of his data pool. Signification (see figure 7) is the process by which Jose adds to his

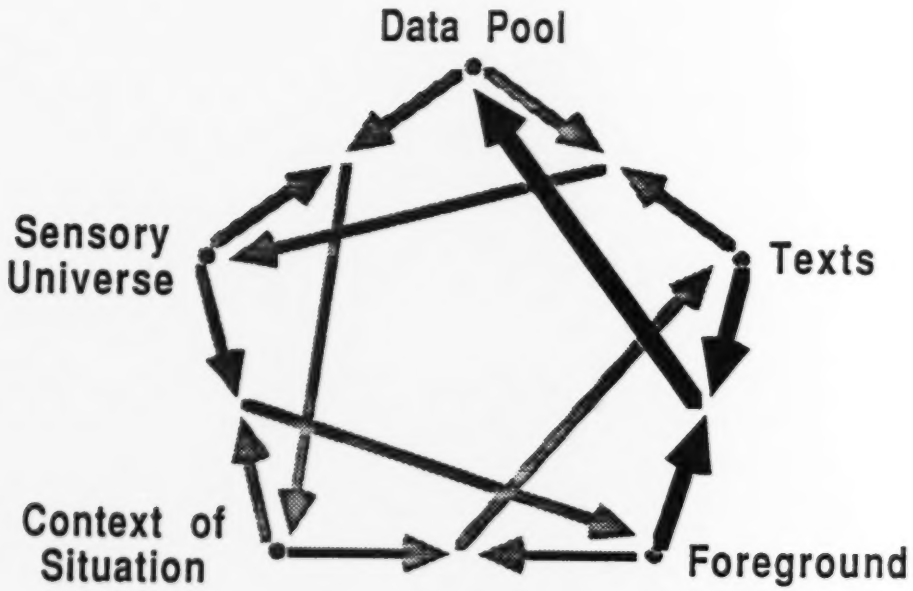

Figure 7.Signification: The transaction between the Foreground and Text

available store of data. Texts are created and specific elements are foregrounded within those texts. This knowledge was generated

through the transaction of Jose's current Text and the specific elements that were Foregrounded. This transactive process supports and extends the Data Pool. We have come full circle in our model but have not yet considered the role others play in our learning. So enters Reuben.

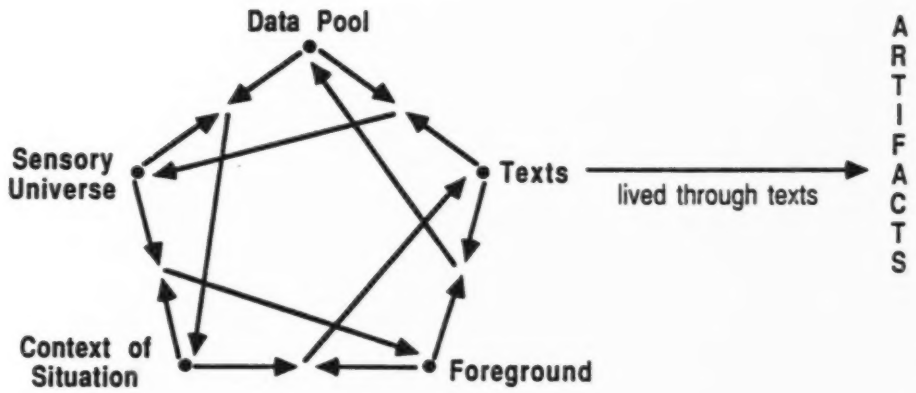

Figure 8. Artifacts: A lived through text

Reuben comes to see what is taking Jose so long in the bushes. Because Jose has created a text, he can represent that text in a sign system - in this case oral language. So Jose tells Reuben that the

spider is building a web and he explains as much of the process as he has observed so far. By representing his text in a sign system Jose has created an artifact (see Figure 8). By living through an experience (a text) an artifact of that experience is created. An artifact might be a discussion as in the case of Jose and the spider. An artifact is any expression of somebody's meaning (text). This might include language (spoken or written), movement (dance, drama, or music), physical objects, or an idea.

This artifact, the string of words, gestures, and facial expressions that Jose uses when Reuben comes to investigate cause Reuben to create his own understanding (text) of what Jose has experienced. In order for Reuben to do this he had to assume that the string of sounds that came from Jose's mouth was purposeful and was generated from some meaning within Jose rather than just random sounds. This assumption is intentionality.

When we assume intentionality we look for meaning in the artifacts we see. We can not recover the original text that produced the artifact, that belongs to its creator. When we recognize intentionality however the artifact has a text potential for us. That is, we interpret it based on our own experience creating a new text for ourselves

So, as Reuben listens to Jose's story he will create his own text utilizing the same process that Jose employed (see figure 9). The difference is however, that Reuben will not be constructing a text from what Jose saw, nor will he create a text from Jose's text. All

Reuben has (or anybody has, for that matter) is Jose's artifact (the words and expressions Jose used).

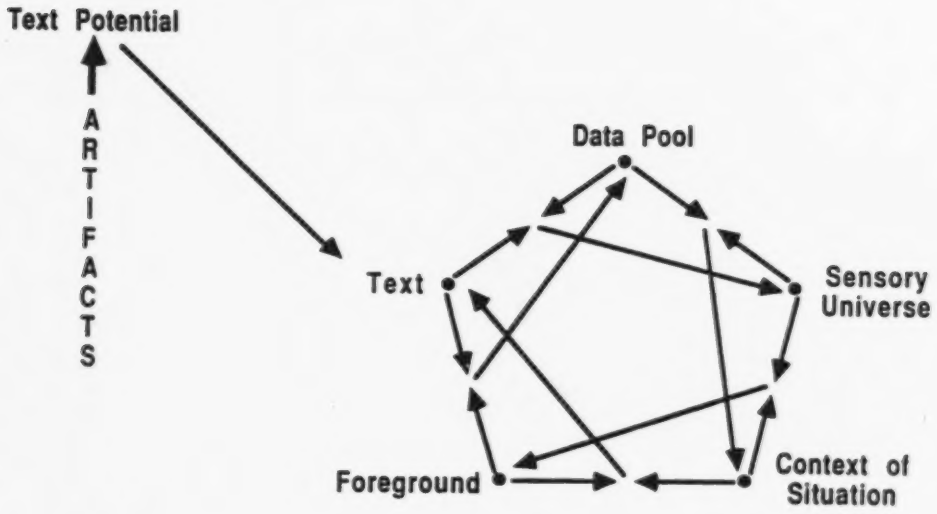

Figure 9. Intentionality: Assuming a text potential

It is important to understand here that an artifact is not a text (i.e. a meaning whole or a story). Texts are mental constructions which can not be shared. However, what can be shared are artifacts, which are created as a result of living through our texts. In this case Jose's artifact was created through language, but had Jose had pencil and paper he could have created a artifact through writing or

drawing. So, while texts can not be directly shared they can be represented through many different communication systems each resulting in a different artifact.

The artifact that Jose created has new text potential for him as well as for Reuben. Once created, the artifact can become the object of Jose's further attention. This is to say that it allows Jose to recast his thinking in a new text. This new text is based not on the original experience but rather on the text and the artifact that was generated from that experience and on the changing context of situation in which the artifact was cast. Each time Jose revisits his artifact, a new text potential exists (see figure 10). This recasting of our knowledge is reflection.

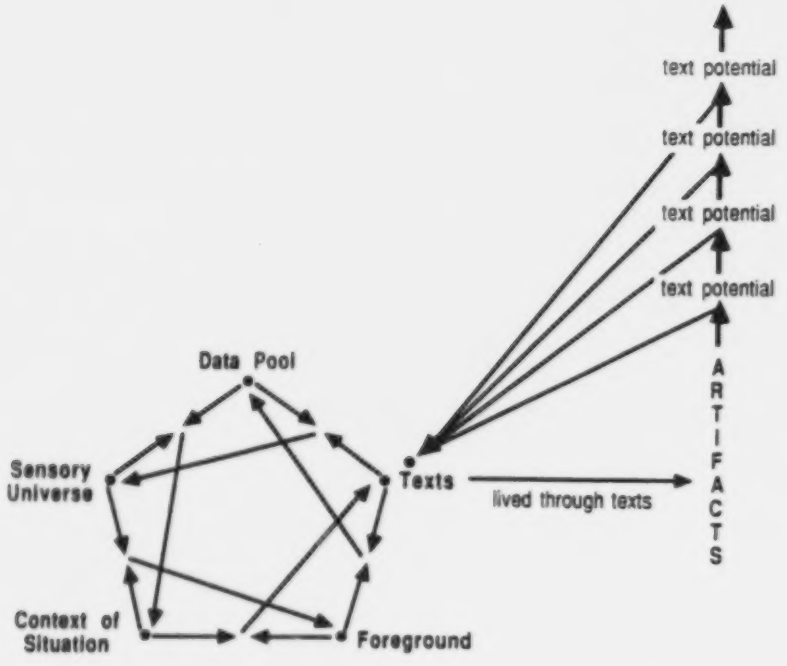

Figure 10. Reflection: Stepping outside of ourselves

In the process of making sense of Jose's artifact Reuben creates a text of his own. Because Reuben and Jose share a common culture and many previous experiences, the text that Reuben creates is similar to Jose's. Had they come from very different backgrounds of experience or languages the two boys' texts would have looked radically different.

Reuben, remembering a past horror story about spiders, says that spiders eat people. This statement adds to the artifact that was initiated by Jose, and it changes it as well. Now, Jose has both the on

going experience of the spider and the evolving artifact (the flow of signs: words, tone of voice, facial expressions, body movements etc) to continue the creation of text. Jose, deciding to go along with the fantasy, plucks an aphid from a leaf and drops it on the web and says that this is Darth Vader. Both boys watch as the spider stalks, sedates, and encases Darth Vader. The experience is no longer Jose's alone. Reuben is now a contributor to it. In this way they are both contributing to the creation of a new artifact (the unfolding story of the spider). They are creating and learning together - they are social sharing as seen in Figure 11.

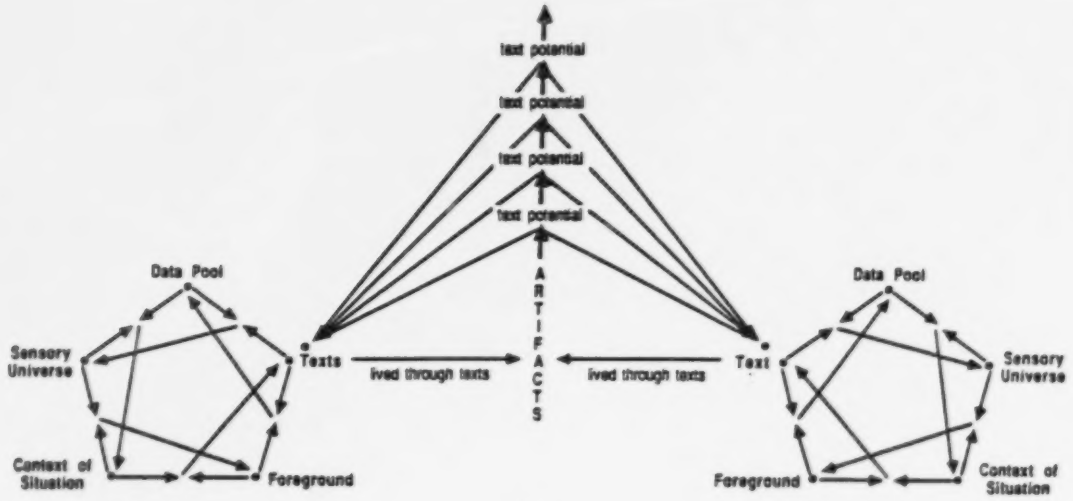

Figure 11. Social Sharing: Each participant contributes to the artifact

Both boys contribute to the artifact that is being created, and each boy brings his personal data pool, previous texts, and unique context of situation into play in creating his own meaning (his own text) from the artifact. While we may share an artifact, even share in the construction of an artifact, we cannot share the texts from which they are constructed. The meaning that Jose is creating will not be exactly the same as the meaning that Reuben is constructing. These differences will create a tension that will pull each boy out of his own thinking in order to understand what the other one is saying or doing. In this way they learn from each other.

Learning is social. Whether Jose was observing the spider by himself or constructing a single shared artifact with Reuben the process is essentially the same. It is social. It is easy to see that when Jose and Reuben worked together the social transaction allowed them both to create meaning that they would not have otherwise thought. But what about when Jose was observing the spider alone? Here I still maintain that it is a social process for three reasons: 1) The apparatus he uses to make meaning (Data Pool, Context of Situation, etc) are social constructs. They arise out of his membership in a culture. 2) As he creates this meaning he does so not as an individual within the universe, but as a member of a social community - a social community with a general consensus on what constitutes a spider and what its significance is. 3) Through the creation of artifacts Jose can respond to his own thinking in the same

way that he responds to the thinking of others. The artifact represents a potential for meaning which Jose is free to explore for new insights. In this way he is his own co-learner.

Learning is psychological. While learning takes place in a social arena the process of making meaning is an internal personal process. Our universe, as reflected in our context of situation, is a personal construction.

Learning is semiotic. From the sensation of light and sound to the creation of texts and artifacts we are weavers of meaning, and meaning is the image that emerges from the tapestry of signs. Taking a semiotic stance the dichotomy of psychology verses sociology meld into a unified field of study. Jose demonstrated his literacy in many sign systems both linguistic and non-linguistic in this episode.

Learning then, whether in solitude or in active participation with others, is social, psychological, and above all semiotic.

Valuing Learning as Social

The preceding story demonstrates that learning is a social an psychological semiotic process. The personal texts created by each boy in part can be accounted for by their combined input from life's experiences and from what they observed in their environment. But the life's experiences accessed, the things in their environment attended to, and in the manner in which they were attended to were

all shaped by the ongoing transaction in which they were engaged. In this respect the event was 'larger than the two of them.'

In addition to demonstrating that learning is social, this story also demonstrates a particularly generative type of social sharing - collaboration. While all learning is social, not all learning is collaborative. I believe that the difference lies in the perception of knowledge itself. The issue is whether the learner views knowledge as facts independent of the knower or whether knowledge is viewed as a personal and social construction.

The Seat Of Knowledge - Independent Of The Knower

When knowledge is viewed as a product that has an existence independent of the knower, it is viewed as a commodity that can be discovered, transferred, or received. In each case the value of learning as social is not recognized and its generative potential not realized.

Discovering knowledge

When knowledge is viewed as a product, discovering knowledge is an exacting process that only well trained experimental researchers are capable of doing. Through trained observations and controlled behavior the experimentalist tests hypotheses against observed phenomena. Meanwhile, the rest of us are viewed as merely muddling around as we try to 'discover' what makes our world 'tick.' This knowledge is viewed as tentative at best, and certainly suspect, because of the 'unscientific' manner in which we

explore our daily lives which, if one believes that knowledge is 'out there' to be discovered, opens us to constant error. If knowledge is 'out there' to be discovered, the participation of other social sharers (research colleagues) is valued as a device that may decrease the chance of 'error' by double checking the observations and logic behind the investigation. But, because 'fact' is independent of the knower the participation of others does not alter what 'truth' there is available to be discovered. While this process of learning is still social, the researcher does not look within or to colleagues to generate knowledge and therefore misses much of the generative power available in social interaction.

Transferring knowledge.

Because we live in a social world, once knowledge is discovered it can be transferred from one individual to another. So the experimentalist researcher discovers 'facts' that may pertain to education. Through trade journals and books these newly discovered 'facts' are transferred to teachers, the hope being that teachers will put this new knowledge to work so that instruction will be improved. The teacher who views herself as a transferrer

of knowledge tests students to determine deficits in learning. The teacher has the knowledge the student is lacking, and good teaching is viewed as transferring that knowledge to the student. In this sense, students also transfer knowledge. When asked to tutor another student or to take an exam, the students take what they

know and present it to someone else - learners are asked to reproduce knowledge not generate it.

This static view of knowledge keeps the researcher and teacher from engaging meaningfully in a generative learning process - knowledge flows from researcher to teacher. The view of knowledge also minimizes the likelihood that the teacher and student will engage in meaning generating social encounters - teaching is viewed as transferring knowledge from the knower to the non-knower. Even when the teacher values and utilizes social interaction by having students tutor students, if knowledge is viewed as a commodity to be transferred the generative potential of social interaction is unrealized.

Receiving knowledge.

When knowledge is viewed as independent of the knower, learners are believed to receive knowledge not create it. Teachers appeal to authority in satisfying their needs; to administrators for administrative issues, and to educational 'experts' for curricular and pedagogical issues. While teachers may sense value in their intuitive understandings, those insights are undervalued in favor of knowledge by those assumed to hold that knowledge.

From this perspective the roll of student (or any learner for that matter) is passive. Knowledge, previously unknown to the learner, is expected to be internalized without change. The indication that leaning has taken place is if the learner can, through word or

action, demonstrate that she now holds the knowledge that was taught.

The Seat Of Knowledge - Created By The Knower]

In contrast to knowledge being 'fixed' and out there to be discovered is the notion that knowledge is created. From this perspective learners seeks to make sense of their world by seeking relationships in the perceived environment. Knowledge that is created (what is known) can not be accounted for in the environment alone - the culture, cognitive structures, and personal history the learner brings along with the current demands for knowledge determines what will be salient and therefore perceived. The point here is not whether knowledge is 'correct' but whether it is functional. Given a different culture, cognitive structures, and personal history the knowledge would have looked very different (Bruffee, 1984). If we accept the notion that 'knowledge' looks different across different contexts then knowledge is better described as 'belief.'

Once it was 'believed' in western civilization that the sun revolved around the earth. Now we know for a 'fact' that it is the earth that revolves around the sun. Once it was 'believed' that atoms were solid objects. Now we know for a 'fact' that only a minute fraction of the space occupied by an atom is matter. Once it was 'believed' that the universe has always existed and now some 'believe' that the universe began with a 'big bang.' What will cause the 'big bang' theory to become fact? Irrefutable proof? And what if

that proof later is replaced with proof of yet another theory? While it appears that we live in a world of 'facts,' history tells us that much of what we believe to be true today will not be believed to be true in the not too distant future. It is interesting that what historically was called 'fact' later is labeled as 'belief' as new 'facts' are generated to replace it. It is evident that a 'fact' is a belief that a community of learners assumes to be 'true', and therefore, it is not questioned. Harste (Short, 1986) states this succinctly, "...science precedes on the basis of belief not fact, and that 'facts' - what we believe known - are but beliefs at rest" (p. 155).

If knowledge is viewed as the creation of belief then the nature of discovery looks quite different. To account for knowledge we can not assume that it totally exists in empirical observation. The observer and the observed are integral to the process. Rather than being an unobtrusive observer the learner is an active participant in generating knowledge. This speaks to the role of other participants in learning. From a 'fixed' view of knowledge the role of participants is to reduce the probability of error - what one learner does can be checked by another. From a generative view of knowledge each participant is an active agent in the generation of knowledge. While they may share a common culture and purpose, they bring different histories and cognitive structures. And perhaps more importantly, their interaction itself creates a new social encounter which is the springboard for new learning.

When the social nature of learning is recognized and valued participants in the learning process are invited to be co-generators of knowledge - they become collaborators.

Valuing Learning as Collaborative

Returning once again to Jose and Reuben, we see that they are collaborators. Their shared text demonstrates the generative nature of the process. Although these boys were collaborators they probably were unaware of the complex process in which they were engaged. Collaboration is a natural learning process that all learners engage in from time to time (Bruffee, 1984). The real power of collaboration as a learning process is realized as the learners come to value and seek out collaborative relationships. The parent or teacher 'instructing' a child becomes a co-learner and kid watcher in supporting the child's growth. The adult grows too in gaining a deeper understanding of how the children structures their worlds. The administrator moves from authoritative director to co-learner in seeking out understandings and creating solutions with teachers. And researchers move from objective observers to co-learners capturing not one reality but multiple interpretations of reality. Walker (in press) develops this notion of co-learning as learnership (see Chapter Three) arguing that as we come to value the broadest spectrum of social interactions we engage in learnership.

Short (1986) delineates eight characteristics consistent with collaborative relationships. These included:

1. Learning together as a community of equals. Collaborators within traditional hierarchical structures (i.e. students, teachers, administrators) view themselves as members of a community of learners. Fleck (1979) refers to this as a "thought collective" in which there is a democratic exchange of ideas and experience.
2. Sharing responsibilities and ownership The roles differentiating collaborators become blurred as they share responsibility for the learning within the learning community. As learners become full participants in the learning process of others in the community they come to share ownership for it as well.
3. Equally valuing differing responsibilities. While collaborators responsibilities differ each brings a unique history to the learning event and so each learner's contribution is unique as well.
4. Giving and receiving reciprocally with others. Collaborators are both givers and receivers in the process of learning together.
5. Establishing an atmosphere of trust, openness and shared vulnerability. Collaborators work to create an atmosphere in which each feels safe to take risks and learn from mistakes.
6. Offering Demonstrations to each other. Collaborators view their actions and the actions as others as demonstrations of how something might be done. This stands in contrast to 'modeling' in which the action is intended to show how something must be done (Smith, 1981).

7. Establishing shared communication and goals. As collaborators work and learn together their shared experiences facilitate the development of a shared language. Sharing some goals in common holds the community together.
8. Recognizing and dealing with disjunctions through consensus. All collaborators reach points of disjuncture. These points are viewed as learning opportunities. While parallel thoughts support ones beliefs, reaching points of disjuncture causes collaborators to rethink and reflect. Valuing both self and others the collaborators work toward consensus as opposed to compromise.

Collaboration describes a particularly generative social interaction in which all participants are viewed as learners, where contributions by all are valued, where a safe environment encourages risk taking, where prolonged engagement supports the development of a common language and common goals, and where roles and responsibilities are blurred and mutually shared.

Summary

This essay developed a social theory of learning. Building on the work of Vygotsky, Dewey, Halliday, Barnes, Deely, Eisner and others I presented a sociosemiotic model of learning that is used as a frame of reference for thinking about the process by which we create texts from sensation. I argue that this semiotic process is both

psychological and social. The process by which sensation, context of situation, foreground, text, and data pool transact is psychological. It is this psychological process that allows us to interact as members of a social community. While the apparatus for cognition is psychological in nature, the substance of the process (the data we perceive and the texts we create) is sociological.

A social theory of learning posits that knowledge is a construction of beliefs derived from the learner's active participation within a social community. Knowledge is based in part on empirical observation, but sense is made from what is perceived through the learner's active search for patterns of understanding, utilizing present needs and past experiences. It is because we are immersed in a culture - in the present, past, and perceived future - that we can make sense of the world around us. And it is because we are immersed in that culture that we have learned, and use a number of sign systems. These sign systems allow us to share our understandings with others, and allow the experiences of others to vicariously become ours. Collaboration is a social transactive process that emerges as learners come to value learning as a social process. While all people collaborate from time to time an enduring collaborative relationship is supported by trust, commitment, common goals, valuing of all contributions, working toward consensus, and a belief that the participants are capable of generating knowledge.

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